CLAIMS

1. An apparatus for firing a paintball projectile, the apparatus comprising:

a grip;

a receiver hingingly attached to the grip, enabling the grip and the receiver to move from an adjacent position to an open position;

a projection on one of either the grip or the receiver; and

a retainer fixedly attached to the other of either the grip or the receiver, the projection and the retainer cooperating to selectively engage each other, thereby retaining the grip and the receiver in a fixed relationship.

2. The apparatus of claim 1, wherein the projection is adapted to receive the retainer and the retainer is capable of moving from a first position to a second position, the retainer engaging with the projection in the first position and the retainer disengaging with the projection in the second position.

3. The apparatus of claim 2, wherein the projection has an engaging surface adapted to mate with the retainer.

4. The apparatus of claim 3, wherein the engaging surface is a channel positioned transversely along the projection.

5. The apparatus of claim 4, wherein the engaging surface is a substantially semi-circular channel and the retainer is a semi-circular shaft, whereby the retainer is positioned to mate with the engaging surface in the first position and to disengage the engaging surface when rotated 180° into the second position.

6. The apparatus of claim 2 wherein the retainer slides from the first position to the second position.

7. The apparatus of claim 3, wherein the engaging surface is a notch.

8. The apparatus of claim 2 wherein the retainer is a latch.

9. The apparatus of claim 2 wherein the retainer is a pin.

10. The apparatus of claim 1, wherein the apparatus further comprises:

a hammer housed within the receiver, the hammer being capable of moving from a ready position to a firing position when the grip and the receiver are in the adjacent position;

a safety retainer associated with the receiver; and

a safety projection associated with the grip, the safety retainer and safety projection engaging one another when the hammer is in the ready position;

whereby engaging the safety retainer and safety projection maintains the grip and the receiver in the fixed relationship, regardless of whether the projection and the retainer are engaged.

11. The apparatus of claim 10, wherein the apparatus further comprises a sear mounted on the grip, wherein the safety projection is attached to the sear, the sear being moveable from a third position, in which the safety projection disengages the safety retainer, to a fourth position, in which the safety projection engages the safety retainer; and wherein the hammer is urged from the ready position to the firing position such that when the hammer is the ready position, the sear engages the hammer and the hammer urges the sear from the third position to the fourth position to thereby engage the safety projection and the safety retainer.

12. The apparatus of claim 11, wherein, when the grip and the receiver are in the open position, the hammer may be inserted into the receiver without contacting the sear.

13. The apparatus of claim 2, wherein the apparatus further comprises:

a hammer housed within the receiver, the hammer being capable of moving from a ready position to a firing position when the grip and the receiver are in the adjacent position;

a safety member in a fifth position for engaging the retainer when the hammer is in the ready position and thereby preventing the retainer from disengaging the projection.

14. The apparatus of claim 13, wherein, when the hammer is not in the ready position and when the retainer is not in the first position, the retainer urges the safety member into a sixth position whereby the safety member blocks the hammer from moving into the ready position.

15. The apparatus of claim 14, wherein the safety member has a first end in contact with the retainer and a second end, the second end having a hammer-engaging surface and a hammer-blocking surface, and wherein, when the retainer is moved from the first position, the retainer urges the safety member into the sixth position.

16. The apparatus of claim 15, wherein, when the hammer is in the ready position, the hammer is adjacent the hammer-engaging surface, thereby preventing the safety member from moving into the sixth position and preventing the retainer from moving into the second position.

17. The apparatus of claim 15, wherein, when the hammer is not in the ready position, and the retainer is not in the first position, the retainer urges the safety member into the sixth position and the hammer-blocking surface prevents the hammer from moving into the ready position.

An apparatus for firing a paintball projectile, the apparatus comprising:

a grip;

a firing assembly comprising a rear housing, a hammer, and a firing bolt;

a receiver for housing the firing assembly;

a projection on one of either of the firing assembly or the grip; and

a receptacle on the other of either the firing assembly or the grip, the receptacle cooperating to selectively engage the projection, thereby retaining the firing assembly in the receiver.

18. The apparatus of claim 18, wherein the projection is selectively moveable between a first position and a second position, and wherein in the first position, the projection engages the receptacle and in the second position, the projection disengages the receptacle, whereby the projection and the receptacle cooperatively retain the firing assembly in the receiver when the projection is in the first position and whereby the projection and the receptacle cooperatively release the firing assembly from the receiver when the projection is in the second position.

19. The apparatus of claim 19, wherein the grip is hingingly attached to the receiver, allowing the grip and the receiver to be selectively positioned into a closed position wherein the grip is adjacent the receiver and an open position wherein the grip is partially spaced away from the receiver, whereby the projection is retained by the receptacle in the closed position and the projection is released from the receptacle in the open position.

20. The apparatus of claim 20, wherein the projection is on the firing assembly and the receptacle is formed by the grip.

21. The apparatus of claim 21, wherein a retainer is attached to the grip and the retainer selectively engages the projection when the grip and the receiver are in the closed position.

22. The apparatus of Claim 19, wherein the projection is attached to the grip and the receptacle is formed by the firing assembly, and wherein the projection is adapted to slide from the first position to the second position.

23. A receiver for firing a projectile, the receiver comprising:

a body defining a first bore and a second chamber, the second chamber adapted to receive a hammer, the hammer having a leading end, wherein the hammer travels along a defined path within the second chamber, and wherein the body defines a vent between the first bore and the second chamber along at least a portion of the path of the leading end of the hammer.

24. The receiver of claim 24, wherein the body has a first end and a second end, and the vent begins at the first end and extends along a partial length of the body toward the second end and extends over at least a portion of the path of the leading end of the hammer.

25. A receiver for firing a projectile, the receiver comprising:

a body defining a first bore adapted to receive a firing bolt and a first chamber adapted to contain compressed fluid, wherein the body further defines a first port integrally formed by the body for communicating compressed fluid from the first chamber to the first bore.

26. The receiver of claim 26, wherein the body further defines a second chamber adapted to receive a hammer and wherein the body further defines a second port integrally formed by the body for communicating compressed air from the first chamber to the second chamber.

27. The receiver of claim 27, wherein the first chamber is coaxial with the second chamber.

28. The receiver of claim 28, wherein the first port is in communication with the second port.

29. An apparatus for firing a paintball projectile, the apparatus comprising:

a receiver defining a first bore, a first chamber and a second chamber, the first chamber being coaxial with the second chamber;

a valve body integrally formed from the receiver defining a first port for communicating fluid between the first chamber and the first bore and defining a second port for communicating fluid from the first chamber to the second chamber; and

a poppet for selectively allowing fluid communication between the first chamber and the second chamber and the first bore.

30. An apparatus for firing a projectile, the apparatus comprising:

a receiver defining a first bore and a second chamber;

a hammer slideably positioned within the second chamber of the receiver between a ready position and a firing position; and

a blow-back chamber within the second chamber for facilitating the return of the hammer from the firing position to the ready position, wherein the blow-back chamber defines a vent between the second chamber and the first bore for allowing airflow passage.

31. A process for making a receiver for firing a paintball, comprising the following steps:

inserting a core into a mold, the core comprising a first cylinder, a second cylinder, and a web attaching the first cylinder in parallel to the second cylinder, thereby forming two linearly-adjacent cylinders;

injecting a plastic material into the mold;

removing the core from the mold; and

removing the receiver from the mold.

32. A process for making a receiver for firing a paintball, the steps comprising:

inserting a core into a mold, the core comprising a first cylinder having a first diameter, a second

diameter, and a third diameter, wherein the second diameter is smaller than the first and third diameters, and a second cylinder positioned in parallel with the first cylinder;

injecting a plastic material into the mold;

removing the core from the mold and the receiver from the mold; and

creating an airflow passage between the second diameter of the first cylinder and the second cylinder.

33. An air source adapter for use in a paintball gun, the adapter comprising:

a body comprising a rigid substrate and defining an airway passage having a first end having a first fitting and a second end having a second fitting; and

a casing comprising plastic over-molded on the body, the casing having a projection for attaching to a grip.

34. A grip for use in a paintball gun, the grip comprising:

a frame defining a substantially recessed interior portion forming a receptacle formed within the frame;

an adapter defining an airway passage;

a projection integrally attached to the adapter, the projection fitting into the receptacle; and

at least one member for attaching the projection to the frame.

35. The grip of claim 37, wherein the member is a fastener for bolting the frame to the projection.

36. The grip of claim 37, wherein the member is a protrusion on one of either the receptacle or the projection and a receiver is on the other of either the projection or the receptacle, the projection and receiver coupling to attach the projection to the grip.